IN THE CLAIMS

Claims 1-9 cancelled.

10. (amended) A system for operating an astronomical observatory, the observatory being located at an observatory site, via requests made by a user interactively or as a script, and located either remotely or at the observatory site, and independent of on site support personnel, wherein the results and status of the requests are displayed to the user in real time, the system comprising:

a web browser, said web browser providing the means for the user to be able to send requests to the observatory, and receive the status and results of these requests by utilizing an http protocol, said web browser further providing a rich graphical interface for the user which may include displays of the status and results of the requests made by the user to various components of the system as they occur in real time;

a set of astronomical hardware, said set of astronomical hardware being located at the observatory site and supplying the means for making celestial observations, said set of astronomical hardware including:

a telescope, said telescope being composed of a telescopic optics system allowing magnified observation of the sky to take place, and a telescope mount capable of controlling the position of the telescopic optics system for the purpose of pointing to and tracking on celestial objects; and

an imaging camera, said imaging camera being located at said telescope, said imaging camera being positioned so as to be able to capture an image of a celestial object at which said telescope is aimed, said imaging camera further capturing said image of the celestial object in a digital format; and

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a web server, said web server providing the means for transmitting and receiving

communications to and from said web browser utilizing an http protocol, said web server

further including the capability of controlling said set of astronomical hardware

according to requests sent to said web server via said web browser from the user, said

web server being made up of:

a request manager, said request manager being responsible for listening for, and

responding to requests sent to said web server by said web browser, said request manager

further being relied upon to queue requests from said web browser in order to permit said

set of astronomical hardware to execute the requests in an orderly fashion, said request

manager also providing the means by which information is sent back to said web browser

utilizing an http protocol;

a power manager, said power manager providing said web server the means for, at

the request of said web browser, being able to power on or off any or components of said

set of astronomical hardware;

a user database, said user database containing a list of user account information

for use in determining if and when a user should be allowed to control the observatory;

a user manager, said user manager accessing said user database and using the

information contained therein to serve as a gate by which the user must gain entrance if

he/she wishes to control the observatory, said user manager further controlling the

scheduling of users for control of the observatory at specific times;

a telescope manager, said telescope manager being the means for said web server

to generate and send specific directions to said telescope based on requests made by the

user, said telescope manager further being able to receive and process information sent to

said web server by said telescope;

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a telescope driver, said telescope driver being capable of translating communications between said telescope and said telescope manager;

an imaging camera manager, said imaging camera manager being the means for said web server to generate and send specific directions to said imaging camera, said imaging camera manager further serving to process information from said imaging camera as well as acting as an image reducer for images generated by said imaging camera; and

an imaging camera driver, said imaging camera driver being capable of translating communications between said imaging camera and said imaging camera manager.

11. (original) The system as described in claim 10 wherein said set of astronomical hardware further includes a dome, said dome providing a protective shell for the observatory against weather and other elements of nature, said dome also having a retractable opening so as to permit said telescope access to the sky.

12. (original) The system as described in claim 10 wherein said set of astronomical hardware further includes an auto-guiding camera, said auto-guiding camera being located at said telescope and being oriented so as to be able to find a celestial object in the sky near the object at which said telescope is aimed, for the purpose of providing said web server with a set of reference images from which said web server may measure any necessary tracking adjustments that must be made during an image capture process made by said imaging camera.

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13. (original) The system as described in claim 11 wherein said web server further includes a dome manager and a dome driver, said dome manager being the means for said web server to generate and send specific directions to said dome, said some driver being capable of translating any and all communications between said dome and said dome manager.

14. (original) The system as described in claim 10 wherein said web server further includes a telescope model manager, said telescope model manager being responsible for quantifying systematic errors inherent in said telescope, these errors include but are not limited to offset or bias errors, polar misalignment, refraction, non-perpendicular axis, gear errors, tube flexure, and fork flexure, said telescope model manager quantifying these errors by using a mapping process to create a model coordinate system which is then translated into the coordinate system of said telescope.

15. (original) The system as described in claim 12 wherein said web server further includes an auto-guiding camera manager and an auto-guiding camera driver, said auto-guiding camera manager being the means for said web server to generate and send specific directions to said auto-guiding camera, said auto-guiding camera further being able to compare the location of a celestial object in different images in order to provide corrections for a tracking rate of said telescope as it follows an object, said auto-guiding camera driver being capable of translating any and all communications between said auto-guiding camera and said auto-guiding camera manager.

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16. (original) The system as described in claim 10 wherein said web server further includes a broadcast manager, said broadcast manager serving the purpose of broadcasting the status and results of requests made by the user to any number of outside observers while ensuring that these broadcasts do not slow the system down, said broadcast manager further being capable of sending these broadcasts utilizing a number of different information transfer technologies, such as file transfer servers, gopher, email, fax, and/or modem.

17. (original) The system as described in claim 10 wherein said web server further includes a celestial object database and a celestial object database manager, said celestial object database containing both ephemeris and graphical data for celestial objects including but not limited to galaxies, minor planets, planets, satellites and stars for any field of view, for any date and time, and said celestial object database manager providing the means for said web server to be able to access said celestial object database to obtain any information contained therein that has been requested by the user.

18. (original) The system as described in claim 10 wherein said web server further includes a celestial image database and a celestial image database manager, said celestial image database containing a set of reference images that cover the entire night sky, these images being essential for certain types of discovery work like supernova and minor planet discovery, and said celestial image database manager providing the means for said web server to be able to access said celestial image database to obtain any information contained therein that has been requested by the user, said celestial image database manager further being able to automatically produce and transmit to said web

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browser a reference image of any object captured in an image by said telescope and said imaging camera.

19. (amended) A system for operating an astronomical observatory, the observatory being located at an observatory site, via requests made by a user interactively or as a script, and located either remotely or at the observatory site, and independent of on site support personnel, wherein the results and status of the requests are displayed to the user in real time, the system comprising:

a web browser, said web browser providing the means for the user to be able to send requests to the observatory, and receive the status and results of these requests by utilizing an http protocol, said web browser further providing a rich graphical interface for the user which may include displays of the status and results of the requests made by the user to various components of the system as they occur in real time;

a set of astronomical hardware, said set of astronomical hardware being located at the observatory site and supplying the means for making celestial observations, said set of astronomical hardware including:

a telescope, said telescope being composed of a telescopic optics system allowing magnified observation of the sky to take place, and a telescope mount capable of controlling the position of the telescopic optics system for the purpose of pointing to and tracking on celestial objects;

an imaging camera, said imaging camera being located at said telescope, said imaging camera being positioned so as to be able to capture an image of a celestial object at which said telescope is aimed, said imaging camera further capturing said image of the celestial object in a digital format;

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a web server, said web server providing the means for transmitting and receiving

communications to and from said web browser utilizing an http protocol, said web server

further including the capability of controlling said set of astronomical hardware

according to requests sent to said web server via said web browser from the user, said

web server being made up of:

a request manager, said request manager being responsible for listening for, and

responding to requests sent to said web server by said web browser, said request manager

further being relied upon to queue requests from said web browser in order to permit said

set of astronomical hardware to execute the requests in an orderly fashion, said request

manager also providing the means by which information is sent back to said web browser

utilizing an http protocol;

a power manager, said power manager providing said web server the means for, at

the request of said web browser, being able to power on or off any or components of said

set of astronomical hardware;

a user database, said user database containing a list of user account information

for use in determining if and when a user should be allowed to control the observatory;

a user manager, said user manager accessing said user database and using the

information contained therein to serve as a gate by which the user must gain entrance if

he/she wishes to control the observatory, said user manager further controlling the

scheduling of users for control of the observatory at specific times;

a celestial object database, said celestial object database containing both

ephemeris and graphical data for celestial objects including but not limited to galaxies,

minor planets, planets, satellites and stars for any field of view, for any date and time;

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a celestial object database manager, said celestial object database manager

providing the means for said web server to be able to access said celestial object database

to obtain any information contained therein that has been requested by the user;

a celestial image database, said celestial image database containing a set of

reference images that cover the entire night sky, these images being essential for certain

types of discovery work like supernova and minor planet discovery;

a celestial image database manager, said celestial image database manager

providing the means for said web server to be able to access said celestial image database

to obtain any information contained therein that has been requested by the user, said

celestial image database manager further being able to automatically produce and

transmit to said web browser a reference image of any object captured in an image by

said telescope and said imaging camera;

a telescope manager, said telescope manager being the means for said web server

to generate and send specific directions to said telescope based on requests made by the

user, said telescope manager further being able to receive and process information sent to

said web server by said telescope;

a telescope driver, said telescope driver being capable of translating

communications between said telescope and said telescope manager;

a telescope model manager, said telescope model manager being responsible for

quantifying systematic errors inherent in said telescope, these errors include but are not

limited to offset or bias errors, polar misalignment, refraction, non-perpendicular axis,

gear errors, tube flexure, and fork flexure, said telescope model manager quantifying

these errors by using a mapping process to create a model coordinate system which is

then translated into the coordinate system of said telescope;

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an imaging camera manager, said imaging camera manager being the means for said web server to generate and send specific directions to said imaging camera, said imaging camera manager further serving to process information from said imaging camera as well as acting as an image reducer for images generated by said imaging camera; and

an imaging camera driver, said imaging camera driver being capable of translating communications between said imaging camera and said imaging camera manager.

20. (original) The system as described in claim 19 wherein said set of astronomical hardware further includes a dome, said dome providing a protective shell for the observatory against weather and other elements of nature, said dome also having a retractable opening so as to permit said telescope access to the sky.

21. (original) The system as described in claim 19 wherein said set of astronomical hardware further includes an auto-guiding camera, said auto-guiding camera being located at said telescope and being oriented so as to be able to find a celestial object in the sky near the object at which said telescope is aimed, for the purpose of providing said web server with a set of reference images from which said web server may measure any necessary tracking adjustments that must be made during an image capture process made by said imaging camera.

22. (original) The system as described in claim 20 wherein said set of astronomical hardware further includes an inside dome camera, said inside dome camera providing a real time image of the inside environment of said dome and the other components of said set of astronomical hardware enclosed therein.

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23. (original) The system as described in claim 20 wherein said set of astronomical hardware further includes an outside dome camera, said outside dome camera providing to said web server a real time view of the sky at the observatory site.

24. (original) The system as described in claim 19 wherein said set of astronomical hardware further includes a set of weather station instrumentation, said set of weather station instrumentation providing information about the weather at the observatory site to said web server, this information might include such measurements as wind speed, temperature, air pressure, and/or humidity.

25. (original) The system as described in claim 20 wherein said web server further includes a dome manager and a dome driver, said dome manager being the means for said web server to generate and send specific directions to said dome, said dome driver being capable of translating any and all communications between said dome and said dome manager.

26. (original) The system as described in claim 21 wherein said web server further includes an auto-guiding camera manager and an auto-guiding camera driver, said auto-guiding camera manager being the means for said web server to generate and send specific directions to said auto-guiding camera, said auto-guiding camera further being able to compare the location of a celestial object in different images in order to provide corrections for a tracking rate of said telescope as it follows an object, said auto-guiding camera driver being capable of translating any and all communications between said auto-guiding camera and said auto-guiding camera manager.

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27. (original) The system as described in claim 19 wherein said web server further includes a broadcast manager, said broadcast manager serving the purpose of broadcasting the status and results of requests made by the user to any number of outside observers while ensuring that these broadcasts do not slow the system down, said broadcast manager further being capable of sending these broadcasts utilizing a number of different information transfer technologies, such as file transfer servers, gopher, email, fax, and/or modem.

28. (original) The system as described in claim 22 wherein said web server further includes an inside dome camera manager and an inside dome camera driver, said inside camera manager being the means for said web server to generate and send specific directions to said inside dome camera, and said inside dome camera driver being capable of translating communications between said inside dome camera and said inside dome camera manager.

29. (original) The system as described in claim 23 wherein said web server further includes an outside dome camera manager and an outside dome camera driver, said outside camera manager being the means for said web server to generate and send specific directions to said outside dome camera, said outside dome camera manager further being capable of comparing an image of the sky at the observatory sit generated by said outside dome camera with a virtual image of the sky at the observatory site provided by said celestial object database in order to determine if the sky at the observatory site is free from cloud cover, and said outside dome camera driver being

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capable of translating communications between said outside dome camera and said outside dome camera manager.

30. (original) The system as described in claim 24 wherein said web server further includes a weather station manager and a weather station driver, said weather station manager being the means for said web server to generate and send specific directions to said set of weather station instrumentation, said weather station manager also being able to match existing weather measurements taken by said set of weather station instrumentation with a configurable set of allowable values, thus said weather station manager can determine if the weather at the observation site will allow for celestial observation, and said weather station driver being capable of translating communications between said set of weather station instrumentation and said weather station manager

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